

Name:	
Enrolment No:	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, December 2018**

<b>Course:</b> Understanding Energy Sector <b>Programme:</b> MA- Economics (with specialization in Energy Economics) <b>Time:</b> 03 hrs. <b>Instructions:</b>	<b>Semester: I</b>  <b>Max. Marks: 100</b>
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**SECTION A**

S. No.		Marks	CO1										
Q 1	Statement of question												
A	<p>The energy source which is extracted from a stock of natural resources or captured from flow resources are called -----</p> <p>a. Primary form of energy  b. Secondary form of energy  c. Renewable form of energy  d. Non-renewable from of energy</p>	<b>01</b>											
B	<p>The following table contains mix of volume conversion and mass conversion units. You are required to segregate the units and their values into volume conversion and mass conversion units.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Unit</th> <th style="padding: 2px;">Values</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">1 US gallon</td> <td style="padding: 2px;">3.785 l</td> </tr> <tr> <td style="padding: 2px;">1 kilogram</td> <td style="padding: 2px;">2.2036 lb</td> </tr> <tr> <td style="padding: 2px;">1 Barrel</td> <td style="padding: 2px;">158.9 l</td> </tr> <tr> <td style="padding: 2px;">1 long ton</td> <td style="padding: 2px;">10105 kg</td> </tr> </tbody> </table>	Unit	Values	1 US gallon	3.785 l	1 kilogram	2.2036 lb	1 Barrel	158.9 l	1 long ton	10105 kg	<b>01</b>	
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C	<p>The primary energy consumption in China increased from 1,970 Mtoe in 2004 to 2,225 Mtoe in 2005. The GDP increased from 14,197 Billion Yuan in 2004 to 15,603 Billion Yuan in 2005 at constant 2,000 prices. What was the GDP elasticity of energy demand in China?</p> <p>a. 1.21  b. 1.11  c. 1.31  d. 1.41</p>	<b>02</b>											
D	<p>Match the following terminologies for Oil</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Proven Reserves</td> <td style="width: 50%; padding: 5px;">Indicated reserves</td> </tr> <tr> <td style="padding: 5px;">Probable Reserves</td> <td style="padding: 5px;">Measured reserves that are economically recoverable</td> </tr> <tr> <td style="padding: 5px;">Proven/Probable Reserves</td> <td style="padding: 5px;">Total oil in place in the reservoirs contributing to the proven/probable reserves.</td> </tr> </table>	Proven Reserves	Indicated reserves	Probable Reserves	Measured reserves that are economically recoverable	Proven/Probable Reserves	Total oil in place in the reservoirs contributing to the proven/probable reserves.	<b>02</b>					
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	Oil in place in proven/probable reserves	Oil in places * recovery factor		
E	If plant capacity is 500 MW, plant is operating 24*7, PLF is 80 % and plant availability is 100%, what will be the number of million units generated in a year: a. 3505 MU b. 3504 MU c. 3405 MU d. 5304 MU		02	
F	State whether the following statements are True or False with reasons. 1. Demand for energy is a derived demand. 2. All essential services are public utilities while all public utilities are not essential services.		04	
G	Explain the following concepts: a) Production and consumption equivalence of energy measurement b) Energy supply mix c) Per capita consumption of primary energy and final energy d) Energy Intensity		08	
<b>SECTION-B</b>				
Q	Statement of question			<b>CO2</b>
1	What are economic characteristics of Public Utility?		05	
2	What are the differences between conventional and non-conventional energy sources and primary and secondary energy classifications?		05	
3	Explain types of Tariff?		05	
4	Discuss the capital cost of Renewable Energy Systems (At least 03) as per CERC Tariff Policy 2018-2019.		05	
<b>SECTION-C</b>				
Q	Attempt any Four Questions			<b>CO3</b>
A	Discuss the Economics of Discriminatory Charging?		10	
B	“In the supply of power, price discrimination is inevitable. Even in a normal situation, when a monopoly supplier faces different markets, prices differ from one market to another. Monopoly power and price discrimination have been described as Siamese twins. However, in India, it is not only the varying demand curves in the different markets but also the socio-economic consideration that lead to different prices. Subsidies are, once again, inevitable in such a situation. In determining the cost to various users, there are obviously many problems. Determination of the cost to serve is not easy in a multi-user situation.” Explain the given statement with the help of suitable theoretical understanding.		10	
C	The following table presents components of Price Build Up of Domestic LPG (Subsidized) at Delhi <b>Price Build Up of Domestic LPG (Subsidized) at Delhi</b>		10	

Sr. No.	Elements	Units	Effective 1 <sup>st</sup> April, 2014
01.	FOB Price at Arab Gulf of LPG	\$/MT	874.95
02.	Ocean Freight from AG to Indian Ports	\$/MT	46.11
03.	C&F (Cost & Freight) Price	\$/MT	921.06
	Or		
	Rs./Cylinder	Rs./Cylinder	800.08
04.	Excise Duty	Rs./Cylinder	0.00
05.	Custom Duty	Rs./Cylinder	NIL
06.	Subsidy by Central Government	Rs./Cylinder	22.58
07.	Marketing Cost of OMCs	Rs./Cylinder	10.52
08.	Bottling Charges (Filling and Cylinder Cost)	Rs./Cylinder	38.68
09.	VAT (including VAT on distributor commission) applicable for Delhi	Rs./Cylinder	0.00
10.			
11.	Price Charged to distributor (Bottling Plant Price)	Rs./Cylinder	373.41
12.	Inland Freight and Delivery Charges	Rs./Cylinder	39.45
	Marketing Margin of OMCs	Rs./Cylinder	6.84
13.	Distributor Commission: Establishment Charges –Rs. 24.24/cylinder & Delivery Charges- Rs. 16.47/cylinder	Rs./Cylinder	40.71
14.	Import Charges	Rs./Cylinder	6.47

You are required to calculate following inputs from the above given information:

- a. Import Parity Price
- b. Refinery Transfer Price (RTP) for domestic LPG
- c. Total Desired Price
- d. Under recovery to Oil marketing companies
- e. Retail Selling Price

D	Categorize the companies and institutions of power sector and oil and gas sector on the continuum of producing to service providing.	<b>10</b>
E	Critically evaluate that how far three main energy policies in India- the Integrated Energy Policy, five-year plans and National Action Plan on Climate Change have been successful to achieve India's three energy objectives.	<b>10</b>

#### SECTION-D

Q	Statement of question		CO4																																				
	<p><b>Price Discrimination by BSES in India</b></p> <p>The Electricity Act of 2003 has created a new paradigm for the development of the power sector in the country. It has abolished the monopoly of the state electricity boards created through the Electricity (Supply) Act of 1980 and has created a new competitive framework for the development of the power sector in the country, with focus on the consumers and the safeguarding of their interests by independent regulatory commissions. The Act has eliminated/reduced entry barriers in the entire chain of the electricity supply business. With this background, BSES, a company of Anil Ambani's Reliance, has entered for power supply in Delhi and Mumbai.</p> <p>In the supply of power, price discrimination is inevitable. Even in a normal situation, when a monopoly supplier faces different markets, prices differ from one market to another. Monopoly power and price discrimination have been described as Siamese twins. However, in India, it is not only the varying demand curves in the different markets but also the socio-economic considerations that lead to different prices. Subsidies are, once again, inevitable in such a situation. In determining the cost to various users, there are obviously many problems. Determination of the cost to serve is not easy in a multi-user situation.</p> <p style="text-align: center;"><b>Table: Electricity Charged by BSES in Delhi in 2007</b></p> <table border="1" data-bbox="203 932 1248 1409"> <thead> <tr> <th>User</th> <th>KW</th> <th>Units consumed/month</th> <th>Rate</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td><b>Rs./unit/month</b></td> </tr> <tr> <td rowspan="4">Domestic</td> <td rowspan="4">2-5</td> <td>0-100</td> <td>2.40</td> </tr> <tr> <td>101-200</td> <td>2.40</td> </tr> <tr> <td>201-400</td> <td>3.90</td> </tr> <tr> <td>&gt;400</td> <td>4.60</td> </tr> <tr> <td rowspan="2">Non-Domestic</td> <td rowspan="2"></td> <td>up to KW</td> <td>5.35</td> </tr> <tr> <td>10-100 KW</td> <td>4.87</td> </tr> <tr> <td>Industrial</td> <td></td> <td>up to 10 KW</td> <td>5.00</td> </tr> <tr> <td>10-100 KW</td> <td>4.32</td> <td></td> <td></td> </tr> <tr> <td>Agriculture</td> <td></td> <td></td> <td>1.50</td> </tr> </tbody> </table> <p><b>(Source: Managerial Economics by Dominick Salvatore, 2008)</b></p>	User	KW	Units consumed/month	Rate				<b>Rs./unit/month</b>	Domestic	2-5	0-100	2.40	101-200	2.40	201-400	3.90	>400	4.60	Non-Domestic		up to KW	5.35	10-100 KW	4.87	Industrial		up to 10 KW	5.00	10-100 KW	4.32			Agriculture			1.50		
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B	Under which degree of price discrimination does the issue shared in the case falls? Explain.	10																																					